Chapter 6

A Covid-19 Response with Years in the Making: The Contribution of EAFIT University to Basic and Secondary Education in Colombia During the Pandemic

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Abstract During the health emergency generated by Covid-19, EAFIT University has worked closely with the National Ministry of Education (MoE) and its Vice-Ministry of Preschool, Basic and Secondary Education, providing ideas and guidelines to 96 certified Secretaries of Education (In Colombia, Secretaries of Education are responsible for managing resources and activities for the educational sector at the province and municipality level. Province governments coordinate educational service in all their municipalities except those over 100,000 inhabitants, which can apply to be *certified* and become autonomous in the management of their resources) in Colombia and strengthening their capacities to autonomously address the emergency in educational institutions. This work includes the development of a national project focused on collectively defining the actions needed for the successful return to academic activities.

This experience is derived from the development, since 2012, of the UbiTAG (The name UbiTAG derives from “ubiquitous learning,” followed by *tecnología-aprendizaje-gestión* (“technology”–“learning”–“management”). The label was introduced in Zea et al. (2012)) model, a holistic approach to digital maturity and change management in schools that has been implemented through ongoing long-term projects in the Itagüí municipality (24 schools) and the Bogotá Capital District (383 schools). This case study will focus on the work that EAFIT has been doing during the emergency, supporting both the MoE and specific Secretaries of Education. In addition, the case will describe some aspects of the UbiTAG model that have helped to address the educational communities’ current challenges.

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6.1 About EAFIT

EAFIT¹ is a private university in Medellín (Colombia) and an institution that both generates and disseminates knowledge, thus fulfilling its role as a teaching and research university. Its declared purpose is to inspire lives and share knowledge to support humanity and society. With a 60-year history since its foundation on May 4, 1960, EAFIT has trained business leaders from Medellín, Antioquia, and other parts of Colombia while positioning itself as a global institution that encompasses different areas of knowledge.

EAFIT's "Itinerary 2030," the strategic plan set forth for 2019–2030, has four main objectives: 1) to promote learning, discovery, creation, and culture within a humanistic approach; 2) to become an intelligent and mindful learning ecosystem; 3) to advocate for alliances that can transform society; and 4) to encourage sustainability that creates trust and hope. Throughout the years, EAFIT has remained open to new areas of knowledge, starting with a School of Management, and gradually including Schools of Economics and Finance, Engineering, Law, Humanities, and Sciences. EAFIT's commitment to the development of Colombia is also evident through institutional consulting services and projects implemented in collaboration with companies, national and local governments, and other entrepreneurial initiatives. Within this context, the university strives to give back all that it has received from society, infusing its social responsibility efforts with a greater sense of purpose. With these strategic commitments in mind, EAFIT remains firm on its promise to inspire, create, and transform.

6.2 Background: 30 Years Working for the Consolidation of a National Ecosystem of Educational Innovation in Colombia

During the health emergency triggered by the spread of Covid-19, EAFIT University helped to support the continuity of academic life in public primary and secondary schools. The initiative was based on a trajectory of more than 30 years of research in education and digital technologies starting with the *Conexiones*² project, which helped to establish an ongoing relationship with the MoE since 2002. EAFIT was a key player in the creation of the *Colombia Aprende* educational web portal in 2004, supporting the MoE in articulating joint efforts to improve access and connectivity

¹EAFIT is an acronym derived from the name at its foundation, *Escuela de Administración, Finanzas e Instituto Tecnológico* (School of Administration, Finance, and Technological Institute).

²*Conexiones* was a project launched in 1993 that sought to bring digital technologies closer to the classroom, the student, and the teacher. It fostered interrelationships between institutional education projects and new pedagogies oriented to digital technologies, reaching around 150 schools in several regions of the country.

to educational resources in underdeveloped areas and to develop teachers' digital skills until 2010. Through subsequent partnerships with the Itagüí municipality (since 2012) and the Capital District of Bogotá (since 2016), EAFIT has contributed to the development of organizational capacities regarding change and educational innovation management, which are essential aspects to make sense of the role of digital technologies in schools. As a result of the experiences detailed below, the university had the trajectory, tools, and resources that allowed it to generate quick proposals and respond to emerging needs.

Between 1993 and 2012, the R&D group in Educational Informatics at EAFIT University designed, structured, and implemented a set of solutions to integrate digital technologies in education, which were formalized in a ubiquitous learning model called UbiTAG. The UbiTAG model “measures the capacity of an educational institution for the integration of ICT in education... The original model, called TAG, was proposed in Zea et al. (2012) and includes three dimensions that must be developed in a balanced way for an educational institution to provide ubiquitous education” (Zea et al., 2013, 2015). The model was developed by considering three initial dimensions: technology, learning, and management. Later, an additional dimension – research, development, and innovation (R + D + i) – was added to give the model “capacity for permanent reflection” (Zea et al., 2013; Zea et al., 2015). In this way, UbiTAG enhanced the original concept from a results-based vision to a continuous developmental assessment based on ongoing improvement and adaptation to the needs of the learning environment. In addition, it allowed the other three dimensions of the model to adapt to any educational context and to circulate content and knowledge to foster a culture of learning and educational innovation through technology and change management processes.

In 2010, EAFIT started *Proyecto 50*, a unit created to support the use of ICT by faculty and administrative staff in the university, which later assisted the R&D group in Educational Informatics to deploy *Plan Digital TESO* (2012)³ and *Saber Digital* (2016),⁴ both initiatives aimed to develop capacities in local governments and public schools for the integration of ICT. These initiatives evolved as part of a multi-year research project funded by the International Development Research

³Since 2012, EAFIT University has been developing the application of this model in the municipality of Itagüí through a public-private initiative called *Plan Digital TESO*: “We transform education to create dreams and opportunities.” In 2015, the achievements of the TESO Digital Plan led to the creation of public policy for the municipality through Agreement No. 10 of December 2015, *Plan Digital TESO 2015-2023*, a public policy of educational innovation incorporating smart use of technologies. Leal and Zea (2017) include a detailed discussion of the components and achievements of Plan Digital TESO.

⁴Starting in 2016, the Secretary of Education of Bogotá and EAFIT University began a process of sensitizing educational actors in schools, highlighting the importance of strengthening learning environments through the integration of digital technologies. Likewise, they undertook a review of the context of digital education in the city and the state of the technological infrastructure and perception of its use and appropriation of ICT by teachers and administrators from 41 schools within the framework of a project entitled “Strengthening of Learning Environments with the use of Digital Technologies (Saber Digital).” This project scaled to reach 383 schools in 2019.

Centre (IDRC, Canada) between 2015 and 2019 and were brought to a national level in collaboration with the MoE twice: in 2015–2016 by means of the *Colegio10TIC National Plan* and more recently through *Aprender Digital* (2019), an initiative that builds on the lessons learned in *Colegio10TIC* and *Saber Digital*, reaching 200 schools across the country.

So far, EAFIT has worked with over 600 schools and 96 Secretaries of Education across the country, designing actions that foster the development of their local capacities to manage change, innovation, and digital technologies, using custom-designed projects based on the UbiTAG model. This work has helped to sustain EAFIT's role as a leading actor at the national level.

These actions are directly connected to the university's mission, which has committed to social construction through partnerships with public and private sectors since its founding, so that its educational impact can have permanence and continuity within Colombian society. EAFIT considers innovation as a bridge connecting the university with its context as well as articulating its relations with public entities.

It is important to highlight that, while no one might have imagined all the societal challenges brought about by a pandemic, the first decades of the twenty-first century projected significant changes in the development of most human processes and relationships brought by the fast advancement of digital technologies. Thus, if education had not been deemed one of the areas with the greatest influence on societal change prior to the pandemic, there can no longer be any doubt about the crucial link that the health emergency has reinforced between education, society, and digital technologies.

6.3 The Covid-19 Pandemic: An Opportunity for the UbiTAG Model to Evolve

When the health emergency in Colombia started in March 2020, EAFIT reached out to several Secretaries of Education to provide informal assistance regarding the challenges of school closure, remote work, and learning at home. Also, the continuous relationship with the Ministry of Education led to an agile collaboration focused on two fronts: the creation of an immediate action protocol for the activation of teaching and learning processes in the territory and updating the *Colombia Aprende* portal.⁵

The first front started by proposing instruments to recognize educational and digital technology needs in the different territories of the country, considering that only around 21.7 million people in Colombia (i.e., 47.69% of the population) have Internet access (Ministry of ICT, May 19, 2020). EAFIT provided technical advice to organize and articulate the operation of Secretaries of Education during the health

⁵ More information about the portal can be found at: <http://aprende.colombiaaprende.edu.co/en/aboutportal/aboutus>

emergency, as well as recommendations regarding the use of other digital resources using the Internet, radio, and television broadcasting, also considering the available physical resources that could ensure the continuity of educational processes for students without connectivity.

On the second front, the *Colombia Aprende* portal was updated and enabled to strengthen the processes of the Ministry of Education regarding the provision of learning services for the educational community. This allowed the MoE to make digital resources and tools available to streamline the remote teaching-learning process.

These first steps led to an ongoing project in which the university is focused on supporting the Vice Ministry of Preschool, Primary, and Secondary Education, on three main fronts: two of them are oriented to respond to the sector's needs regarding the Covid-19 pandemic, while the third one aims to consolidate the solutions generated during this period for the near future. For María del Rosario Atuesta, project manager of *Aprender Digital* program, the first front is focused on "support[ing] the Ministry as a complement in those areas that are not easy for them to manage, given their government structure" (personal communication, June 24, 2020). The role of the university is to provide orientation in the creative adaptation of traditional learning methodologies and to transfer the lessons and strategies provided by the UbiTAG model, to enhance continuity to the educational processes of students from their homes.

In coordination with the support provided to the Ministry, the second front involved work with 96 Secretaries of Education across the country during 2020. Through knowledge transfer and technical support, the capacities of officials from territorial entities would be strengthened, so that they could lead, develop, and support innovation processes in their own school systems. Also, Secretaries of Education received orientations to formulate territorial plans for educational innovation, considering emerging dynamics in their local contexts.

Drawing on the first two fronts, the third front intends to structure a national ecosystem of educational innovation so that local governments, the national government, and other actors in the Colombian educational system can articulate their efforts in providing resources, advice, support, and guidelines sharing successful experiences within the territories. In other words, the actions carried out to address the Covid-19 pandemic will lay the foundations to improve the coherence and alignment of the Colombian educational system in the future, using digital tools and technologies that allow the development of new learning experiences for students.

What we are doing is supporting the strengthening of the national ecosystem of educational innovation (...) through the conversations and the bets that we are making for the territorial entities, specifically Secretaries of Education. So that they are the ones that stimulate all the innovation and all the possibilities of reinventing themselves, that this contingency generates in each one of the territories. (personal communication, M. del R., Atuesta, June 25, 2020)

The Ministry of Education provided funding for the actions described above, with an investment close to US\$850,000 during 2020.

In addition, EAFIT developed a partnership with the Secretary of Education of Bogotá to support 183 public schools in the capital city (about 50% of schools). It is worth mentioning that, starting in January 2020, there were new local governments (governors and mayors) across the country, so the beginning of the period of mandatory preventive isolation in the country coincided with the beginning of their terms. In the case of Bogotá, the change of mayor meant at the same time a change of political orientation. However, the *Saber Digital* project, implemented by EAFIT since 2016, was selected to continue its implementation during the Covid-19 pandemic with the name of *Aprende en Casa con Saber Digital* (*Learn at home with Saber Digital*).

Thus, since March 2020, days before the declaration of a health emergency, the Secretary of Education of Bogotá and EAFIT began preparing action protocols that would allow a rapid response to the emergency. Then, while all the schools in the country were on a break from activities (according to guidelines from the national government), schools in Bogotá continued their educational activities with the support of *Red Académica*⁶ and the city educational portal, which had been strengthened as part of the implementation of *Saber Digital* (2016–2019). According to Patricia Toro, director of *Saber Digital*, several strategies were deployed during the second half of 2020, providing immediate reaction to the emergency and providing feedback for the design of the initiative in the long term. The intervention focused on principals and administrators, educational innovation lead teachers, counselors, students, and parents.

Some actions that were carried out during 2020 include i) online brainstorming and exploration sessions with teachers and principals to develop their skills in the use of digital tools; ii) planning and deployment of a support network for parents and caregivers building on their learning experiences at home; iii) organization of online meeting spaces focused on the discussion of domestic violence with the accompaniment of psychologists; iv) design of future scenarios with school administrators; and v) strengthening of *Red Académica* with educational content for different grade levels and a digital toolbox that facilitates learning processes. The Secretary of Education of Bogotá provided funding for this project, with an investment close to US\$540,000 during 2020.

Some of the specific actions that were developed throughout the year for each stakeholder are:

- (i) For principals (n = 183): a) reinforcement of skill development as necessary (based on a needs analysis); b) dissemination of innovative emergency management responses; c) documentation of emerging innovative educational practices.
- (ii) For teachers (n = 800): a) development of digital skills in teams of lead teachers; b) support for the recognition of students' home learning environments; c) conducting brainstorming sessions to enhance learning at home; d)

⁶ Red Académica is the educational platform of the Secretary of Education of Bogotá (<https://www.redacademica.edu.co/>)

reinforcement of training for the design of online activities (i.e., digital educational content); e) dissemination of innovative experiences through *Red Académica*.

- (iii) For counselors (n = 183): a) capacity building for the design of online activities; b) socialization and appropriation of digital educational content; c) dissemination of innovative experiences through *Red Académica*.
- (iv) For students (n = 1600): a) accompaniment during the selection process of monitors (junior teaching assistants) and student leaders; b) formation of student support networks; c) development of brainstorming sessions; d) collaborative work with student leaders.
- (v) For parents (n = 400): a) activation of a district network of parents and caregivers; b) brainstorming days with parents and caregivers to improve learning at home; c) distribution of tools and content to strengthen learning at home.

In summary, throughout 2020, EAFIT worked with 96 Secretaries of Education at the national level, which affects around 11,700 basic and secondary schools across the country (Ministry of National Education, August 16, 2017). In addition, EAFIT has been working directly with 183 schools in Bogotá.

Articulated interdisciplinary work is essential to get the results mentioned above, which is why several units within EAFIT are part of these projects. Among these, the Center for Excellence in Learning (EXA) and *Innovación EAFIT* department stand out, being respectively responsible for the academic and administrative coordination of the projects. EXA “works for the consolidation of ecosystems of educational innovation, through the connection between learning, discovery, and creation as key elements in the transformation of education in Colombia” (Center for Excellence in Learning, 2018). On the other hand, *Innovación EAFIT* channels and organizes the intervention that the University carries out with public entities, being “a platform that participates in the execution of projects from the formulation and administrative, technical and contractual organization so that they flow properly” (Adriana García, personal communication, June 25, 2020). Depending on the scope of the projects, other areas are involved as well to complement the process with their learning and experiences. For example, the academic departments of Systems Engineering, Economics, and Government and Public Policies contribute with their research and work teams from the technical and educational points of view with processes that enrich the model. Finally, programs such as *EAFIT Social* and the Office of the Vice-president for Learning guarantee the social work and real contribution of the university in the country’s educational sector.

However, these partnerships between governments and EAFIT’s research teams have not led yet to a close integration with the regular activities the university develops for its undergraduate and graduate students. Therefore, a new project to involve EAFIT’s students with the model UbiTAG throughout a service-learning volunteer experience is being planned in the short term. This will be the ideal scenario to underscore the importance and relevance of this model, its significant contribution to the learning processes of the university community, and its undeniable opportunity to be customized for other higher education institutions in Colombia and

abroad. In the medium term, addressing this disconnection involves strengthening the Learning and Educational Innovation Research Group and its associated student research incubator. Finally, in the long term, the university will focus on creating a School of Education to ensure continuity and coherence in the actions it undertakes as an actor in the educational innovation ecosystem at the national level.

6.4 A Sense of Possibility: The Challenge for Education in Colombia

The actions described have presented significant implementation challenges, both before and during the Covid-19 crisis. Some challenges are related to the continuity of the processes, for example, the timing gaps between contracts and changes in government. Others have to do with the volume of information to be collected and the scale of the actions to be implemented. These, in addition to limited resources, are aspects that make monitoring and evaluating interventions a particular challenge. EAFIT has developed a monitoring and evaluation strategy that tracks the actions implemented in the strategic plan of the different projects at the local and national level. Two of the tools supporting this strategy are directly related to the UbiTAG model:

- (i) **Multivariate Index of Use and Appropriation of Technologies in Schools** (Zea et al., 2017): The index is based on the measurement of six dimensions from the perspective of teachers. It accounts for factors regarding knowledge level, intensity of use, intentionality, availability, institutionalization, and benefits of technology appropriation. The measurement has allowed the generation of timely diagnoses in schools regarding the integration of digital technologies as an element of pedagogical and educational mediation, while allowing to understand the extent to which the actors are advancing according to the model. (personal communication, M. del R., Atuesta, June 25, 2020).
- (ii) **Educational Innovation Index for Territorial Entities**: The index is a self-assessment tool that allows for the evaluation of the state of educational innovation management. It identifies the potential of public entities to engage in educational innovation processes, by comparing the progress made in acquiring skills. It is made up of three pillars, nine dimensions, and twenty-nine questions that seek to assess the progress in the implementation of the strategy that sets the goal of consolidating a national ecosystem of educational innovation. The index will begin to be applied in the territory to establish a baseline on the management of innovation so that a diagnosis can be generated about the situation of provinces and municipalities in relation to Educational Innovation and its effects after the interventions carried out during the pandemic. Based on this self-assessment, territorial entities will be able to identify their needs and establish the necessary coordination with entities of different levels (even among peers) for the development of actions that allow them to strengthen initiatives in their territory.

Both indexes have been developed with the participation of EAFIT's School of Economics and Finance, which made key contributions to the creation, validation, and monitoring of these tools, their application, and results. In Itagüí and Bogotá, for example, the first index was applied every 2 years, which has allowed for the collection of reliable information to enrich the lessons learned and provide feedback and adjustments to the model.

It has been pointed out that specific actions developed in relation to the pandemic have been a natural consequence of years of collaboration with many organizations. However, it is possible to single out the achievements obtained in recent months, regarding the continuity of the academic life across the country and in Bogotá:

- (i) The availability and functionality of the *Colombia Aprende* portal: This is one of the six pedagogical tools prioritized by the National Ministry of Education for the continuity of the academic life of boys and girls. Thanks to the efforts made in previous years, it was available from the first days of the crisis.
- (ii) Achieving continuity to *Aprende en Casa con Saber Digital*, which supports institutions in the capital district in a year of government change.
- (iii) The recognition by the Ministry of Education on the importance of deploying work with territorial entities focused on current needs, but with a vision for the future that allows building the necessary capacities to meet the needs of the territories.

During the last few years, the actions carried out have shown that the scalability of the model depends on the ecosystem robustness, which highlights the role of EAFIT supporting its implementation. Regarding the country's educational sector, responsibility must be shared, so decentralization is key. Along those lines, Mario Vargas, director of EAFIT Social, reiterates that “when proposals highlight the autonomy of the territories, spaces of respect and accommodation are created that value the capacity of each Secretary” (personal communication, June 24, 2020).

These milestones are building blocks of a path that does not end here. The current situation will soon become another milestone allowing EAFIT to move forward. For example, the *TESO Digital Plan*, as expressed by Adriana García, was a milestone that moved the university to systematize the model and to understand that it is in constant construction, that it evolves and feeds on itself. In the same way, María del Rosario Atuesta states that every time the model is applied, they have learned the importance of the participation of the territories, the relationships of the actors, and the dynamics of demand and supply in an environment where it is challenging for local actors to make sense of change (personal communication, June 25, 2020).

The Covid-19 pandemic has shown that, despite the previous efforts made by organizations such as EAFIT and many local and national governments, there is still a long way to go to provide all schools in Colombia with basic public services (water, electricity, Internet). For instance, as reported in 2019, 58% of the country's rural population received non-potable water (*El Espectador* Newspaper, September 30, 2019). There are social and technical gaps that still need structural changes to satisfy the educational needs of the country, and the required biosecurity protocols

to contain the pandemic demand additional efforts for which most territorial entities are not prepared for.

On the other hand, continuity is one of the great challenges faced by the actions described, closely related to planning and monitoring. Mario Vargas expresses that, particularly in education, time is a crucial variable that demonstrates the need for long-term processes. When interacting with governments, designing and executing projects beyond a single term is critical, given that education processes are focused on the relationships between people. If these relationships do not provide trust and security, the interactions that occur in the ecosystem will not generate the intended impact.

In this sense, there is an important role for universities to provide the continuity that remains elusive for governments. In many ways, EAFIT has been part of the history of educational innovation in the country, safekeeping lessons learned and using them to consider the recurrent educational challenges that lie ahead for Colombia. The future of the actions described depends on the delicate balance between change and continuity, but also on the institutional capacity to strengthen the next steps and to adapt to new contexts and needs. Thus, future actions are focused on:

- (i) Developing a model to measure the social impact of the interventions, not only to measure what outputs they contribute, but also to identify and act on the specific contexts of the communities.
- (ii) Creating elements of transition to remote-online work and generate the basis for protocols and possible future scenarios, since some characteristics of the current scenario might happen again.
- (iii) Working toward the evolution of the model so that it caters to the national, regional, and local needs in a relevant way.
- (iv) Transferring the intervention to the territorial level to develop the capacities of officials and Secretaries without losing sight of the schools, therefore building bridges between the natural actors of the ecosystem.
- (v) Evaluating the role of the model within national ecosystems while recognizing its strengths and shortcomings, as well as the current challenges that make long-standing issues even more critical.
- (vi) Remaining attentive to the changes suggested by the environment so that the model continues to adjust to current demands and remains true to its spirit, recognizing the need for adaptation that monitoring the implementation indicates.
- (vii) Focusing research efforts on the improvement of monitoring and evaluation to obtain information that allows reorienting of the model, as well as understanding how the territories behave in relation to educational innovation during the Covid-19 pandemic through gathering information involving students' experiences with the model.
- (viii) Gathering relevant information to compare the outcomes achieved before and after the pandemic to prepare the model for future scenarios.

Ultimately, the presence of unexpected challenges, such as those presented by the Covid-19 pandemic, has reaffirmed EAFIT's mission of working toward the development of a sustainable education ecosystem. Although there is still a long way to go through this scenario of uncertainty, the emerging opportunities to reinvent the educational sector will help to consolidate the National Ecosystem of Educational Innovation.

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